DEPARTMENT OF

SOLDIERS' CIVIL RE-ESTABLISHMENT

CANADA

SUMMARY OF REPORT

BOARD

OF

TUBERCULOSIS CONSULTANTS

DECEMBER, 1920

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OTTAWA
THOMAS MULVEY
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
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19558—1

BOARD OF TUBERCULOSIS SANATORIUM CONSULTANTS

SUMMARY OF REPORT

In April, 1920, the Director Medical Services of the Department of Soldiers' Civil Re-establishment appointed a Board of Tuberculosis Sanatorium Consultants, consisting of the following specialists in the treatment of tuberculosis:—

Dr. C. D. Parfitt (chairman), Medical Director, Calydor Sanatorium, Gravenhurst, Ont.

Dr. W. M. Hart, formerly O.C., Special (Tuberculosis) Hospital, Lenham, Kent, England, and Saskatchewan Sanatorium, Fort Qu'Appelle, Sask.

Dr. J. R. Byers, Medical Superintendent, Laurentian Sanatorium, Ste. Agathe des Monts, P.Q.

Dr. A. F. Miller, Medical Superintendent, Nova Scotia Sanatorium, Kentville, N.S.

Dr. D. A. Stewart, Medical Superintendent, Manitoba Sanatorium, Ninette, Man.

This board was instructed by the Director Medical Services to study, in general, the whole question of the treatment of tuberculosis occurring amongst the ex-members of the Canadian and Imperial forces in Canada. The greatest liberty of investigation was afforded at all points. Business details were not specified as part of the inquiry, but special reports were to be made in detail on the several sanatoria, regarding:—

(1) The suitability, sufficiency and efficiency of the plant in general, and its equipment and furnishings.

(2) The personnel in general, and especially the medical personnel as regards special training and experience in the diagnosis and treatment of tuberculosis.

(3) Medical standards and records as regards method and efficiency.

(4) Conclusions regarding patients examined by the board:—

(*a*) Patients who have been under treatment for a longer period than five months, with a view to determining whether the department is justified in retaining them longer in the sanatorium for treatment.

(*b*) Patients of uncertain diagnosis, or those under treatment for conditions other than pulmonary tuberculosis, but who, in the judgment of the medical superintendent, require prolonged sanatorium treatment.

(*c*) Any special cases for whom a medical superintendent required consultation.

(*d*) All patients in whom poison gas may have been a factor in producing illness (especially those with official histories of exposure), with a view to determining the etiological association of the exposure with the condition for which the patient is being treated.

(5) The quality, source of supply, preparation and service, of the food.

(6) Complaints, which, without prejudice, may have been brought forward by patients, staff or employees, individually or assembled, by the invitation of the board. These to be forwarded to the Director Medical Services with comments and recommendations.

(7) Recommendations as to:—

(*a*) Necessary or desirable additions to, or alterations of, plant and equipment, especially in regard to improvement of medical facilities, viz: artificial pneumothorax apparatus, X-ray department, laboratory, dental

department, provision for natural or artificial sunlight, hydrotherapeutic arrangements, desirable development of a medical library, occupational therapy and vocational training.

(*b*) Improvements of medical standards and records.

(*c*) Modifications of service and policy.

(*d*) Concentration of patients wherever practicable, with the closing of unnecessary or less-efficient sanatoria.

In addition to the care of patients under treatment the general question of the after-care, and employment after discharge from the sanatorium of the tuberculous ex-service man was to be given consideration. In connection with this subject a special report was required regarding the applicability of Order in Council P.C. 2328 to the sanatorium dischargee.

The board assembled at Ottawa on April 16, 1920, and reported verbally four months later, after having completed its survey of the twenty-six sanatoria in Canada and the special clinics treating D.S.C.R. patients. The several matters to be considered are dealt with in a series of reports as follows:—

(1) The application of Order in Council P.C. 2328 to the tubercuIous ex-service man.

(2) Medical statistics regarding (*a*) patients in residence, (*b*) patients discharged.

(3) The present and future distribution of D.S.C.R. patients in sanatoria.

(4) A critical review of the several sanatoria inspected with classified notes on details.

(5) A classified record of complaints and suggestions from patients, staffs and employees, with comments.

(6) The after-care, post-sanatorium employment, and possible re-establishment of the tubercuIous ex-service man.

(7) A general review of the tuberculosis problem as regards the ex-service man with conclusions and recommendations.

Medical Statistics*

Incidence of Tuberculosis in the C.E.F.

The 8,571 so-called tuberculous ex-service men treated by the department to April 30, 1920, when proportioned to the 590,572 men entered in the C.E.F., give an incidence rate of 2·5 per 1,000, yearly, for the $5\frac{3}{4}$ years considered. This will be referred to as the crude incidence rate.

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* Note.—(1) Because of the month in which this inquiry commenced, the numbers considered are as they were on April 30, 1920, unless otherwise stated.

(2) Apparent discrepancies in number are due to the following causes:—

(*a*) The department records as one individual only, each patient taken on strength for treatment, no matter how often taken on strength.

(*b*) The sanatoria include amongst admissions and discharges patients who have been transferred from one institution to another, and those who have been readmitted for treatment. By most institutions, these are counted as separate individuals each time.

(c) Numbers recorded in aggregates are not invariably obtained from all or the same sanatoria.

(3) Computation:—

(*a*) Averages are invariably made from numbers, actual or computed; never from percentages.

(*b*) Basic numbers from which percentages are derived vary. Hence, when comparing percentages, their origins must be considered.

(*c*) Where it would have been unreasonable to demand a classification based upon a study of the case-records of all the patients discharged, because of the considerable number involved, serial groups of 100 cases only have been classified. These have been distributed proportionately to the total under consideration. From a classification of each serial group, the proportions obtained have been applied only to the total of the same institution.

The average number of men under arms throughout the period of the war, with deductions for dead and missing, has been estimated at 317,000. The annual incidence rate is, therefore, more fairly based upon this number, and is 4·7 per 1,000. Since 8·6 per cent of the patients treated in sanatoria were diagnosed as non-tuberculous, ·4 per 1,000 should be deducted, leaving 4·3 per 1,000 as tuberculous. These are further divided into bacillary positive cases, 1·9 per 1,000 (44 per cent), and clinically tuberculous cases, 2·4 per 1,000. This rate of 4·3 will be referred to as the corrected incidence rate.

COMPARISON WITH B.E.F.*

The incidence rate of tuberculosis in the British Forces, obtained by proportioning the total cases to total enlistments, without correction for the annual average under arms, is 1·07 per 1,000, yearly. It is understood that, in Great Britain, the presence of bacilli was necessary for a diagnosis of tuberculosis; so that, instead of comparing the rate of 2·5 per 1,000, similarly obtained for the C.E.F., with the British rate, the crude rate for bacillary positive cases only should be used, 1·1 per 1,000 (44 per cent of the 2·5 crude rate). The incidence rate is, therefore, approximately the same in the two armies; but, in Canada, 1·4 per 1,000 have been treated in addition as being probably tuberculous.

COMPARISON WITH A.E.F.†

The rejections for tuberculosis from the first million men drafted into the American army, were 8·73 per 1,000—more than six times the death rate estimated for men of military age in Canada. This was quite a non-selective draft, and many cases of active tuberculosis were necessarily included. The break-down rate during service (incidence) was 2·9 per 1,000, rather more than the probable comparable incidence (2·5) of the C.E.F.

COMPARISON WITH CIVIL LIFE

A comparison between the incidence of tuberculosis in the army and in civil life, while of interest and importance, may only be approximated. Too short a time has elapsed for the death-rate from tuberculosis in the army to become reliable for comparison with the civilian death-rate. The civilian death-rate is the only index of the amount of tuberculous disease in the community at large; and, by multiplying this by various factors, estimates have been made of the morbidity, or tuberculous status, of the community, existing at any one time. It is fallacious, however, to compare this momentary status with the annual incidence, or crop of tuberculosis, yielded by the army, removed from it, and placed in sanatoria. The civilian incidence is that amount of new tuberculosis which yearly enters the tuberculous group to replace losses by death and recovery, absolute or relative. The civilian incidence, with some variation, has long been operating to evolve the tuberculous group.

It can be shown that, operating for a period of 20 years, an annual incidence of twice the death-rate will compensate losses by death; maintain an average number of 5 times the death-rate of clinically active cases; a group of equal size of less obviously active cases; and a group of arrested cases ten times as large as the death-rate. Two-thirds of this group of arrested cases (16 per cent of the incidence) will not die from tuberculosis within the period. This last group is fairly comparable with the 25 per cent of patients who do not die from tuberculosis within 20 years after discharge from the Trudeau Sanatorium. (Trudeau Sanatorium Analysis). After the 20-year period, this status will be maintained by an incidence rate one-third greater than the death-rate.

Thus, the several estimates of the relation of morbidity to mortality, the results of approximations or surveys, can be satisfied.

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* Derived partly from miscellaneous unofficial information.

† Figures given by Major Ralph C. Matson, M.C., U.S. Army, Am. Review Tuberculosis, July, 1920 (W. H. Baldwin, A.R.T., Aug., 1919, gives a rejection rate of 23.4 per 1,000, i.e., of civilians with active or arrested tuberculosis, comparable with the Framingham Survey of 20.8 per 1,000).

In Canada, the death-rate from tuberculosis in 1915, was 1·08 per 1,000 for the whole population. For men of military age, the rate has been estimated at 1·36 per 1,000 for the whole country, from incomplete vital statistics. This group had a rate of 1·06 per 1,000 in the provinces of Alberta, Saskatchewan, Manitoba and Ontario. The general rate for these four provinces was ·84. This relatively more vigorous population provided 66 per cent of the enlistments.

The development of tuberculosis will continue, somewhat modified, because of selection, in the army group, apart from all considerations of army life. The army has had the advantage of the selection of an average higher physical manhood than the average of civilian life, while the men composing it have had the advantage of regularity of life; much time spent in the open; and a higher standard of food. On the other hand, the men have undergone varied hardships of service, and have been exposed to intercurrent disease through close association in barracks, etc., to a greater extent than have civilians. Any difference between the natural civilian incidence for men of military age, and the actual incidence in the army group, will be due to army life. An incidence rate somewhere between one and one-third times and twice the death-rate (1·36 for males of military age) may reasonably be assumed to be operating in any case, as amongst civilians. This will be from 1·8 to 2·7 per 1,000. The corrected army incidence was shown to be 4.3 per 1,000. An additional incidence rate somewhere between 2·5 and 1·6 per 1,000 may, therefore, fairly be considered due to army life. This is an increase over the estimated rate of incidence for civilians of 140 per cent in the first instance, and 60 per cent in the second. Broadly speaking, there is, then, twice as much tuberculosis amongst the ex-service men of the C.E.F., as amongst civilians of the same age period, (20-44).

ADMISSIONS TO SANATORIA

The total number of admissions to twenty-two sanatoria were 9,382, and 7,570 (80·6 per cent) have been classified according to the province of enlistment. Provincial patients not classified, 1,364 (14·6 per cent of the total), cannot be distributed. The omissions are, however, fairly compensated, since, by readmissions for relapse (1,042) and transfers of patients from one sanatorium to another, the number of admissions shown is approximately 20 per cent in excess of the number of individuals who enter sanatoria for treatment for tuberculosis. These discrepancies cannot be fully corrected at the present time.

PROVINCIAL INCIDENCE

When these groups are proportioned to the number of men enlisted from the respective provinces (the same factors for correction being applied as were used for obtaining the incidence ratio), there is found, with two exceptions, a variation in rates for the several provinces comparable with the variations for the civilian rates.

From Alberta eastward there is a fairly consistently increased incidence from 3·16 in Alberta to 9·95 per 1,000 in Nova Scotia and Prince Edward Island, the rate rising rapidly east of Ontario, while in British Columbia the rate of 4·25 lies midway between the rates for Ontario and Quebec. The exceptions are Saskatchewan, in which province the civilian rate is unduly low (due possibly to error in recording vital statistics), and Nova Scotia, which apparently has a relatively highly tuberculized population, with a greater number of breakdowns on service in consequence.

The tuberculosis in the army, then, is strictly proportionate to the amount in the civil population from which the men have been drawn. The more tuberculized the province, the more tuberculosis will be found amongst its ex-service men.

CLASSIFICATION OF PATIENTS

A classification of all the patients treated at the several sanatoria gives the composite opinion of all the physicians who, during the past six years, have under-

taken the several statistical groupings, according to their individual interpretation of the criteria defined by the National Tuberculosis Association. In some cases, opinions were necessarily based upon the work of predecessors. Experience, facilities for investigation, and the degree of opportunity for intensive work, will all be variable factors in the grading of cases. Transfers from one institution to another, and readmissions for relapse, cause some confusion since they not only swell the apparent number of patients treated, but they may be graded differently both on readmission and on redischarge. The latter, moreover, are in many cases treated in some other than the original sanatorium of admission. All numbers used are the actual figures, and when numbers derived from percentages are used it is so stated. The basic groups must vary since classification for all patients cannot be obtained. These groups are, however, so large that proportions derived from any of them may fairly be applied to other groups, if other, not given, ratios are desired. Some further studies, still incomplete, cannot be included. Special analyses, at the cost of much time, have been made by the several superintendents in order to make this summary possible.

ADMITTED PATIENTS

For 8,571 tuberculous patients treated by the department, there have been more than 9,382 admissions to twenty-three sanatoria and three special tuberculosis wards of general hospitals, besides some to other institutions from which information was not obtained. An analysis has been made of 6,463 admissions and discharges.

Of these patients admitted, 5,850 (90·7 per cent) had pulmonary tuberculosis, and 47 per cent of these were bacillary positive; 41 (0·63 per cent) had tuberculosis other than pulmonary; 564 (8·7 per cent) were not considered tuberculous, and in 8 (0·12 per cent) there was no record of diagnosis. The pulmonary tuberculosis group was further classified as 9·3 per cent of doubtful evidence; 25·7 per cent as incipient; 40·2 per cent as moderately advanced and 24·7 per cent as far advanced cases.

DISCHARGED PATIENTS

Of the patients discharged, 111 (1·7 per cent) were not recorded; 559 (8·6 per cent) were considered not to be tuberculous, while 5,793 were tuberculous and classified as follows: disease arrested, 345 (5·9 per cent); apparently arrested, 1,265 (21·9 per cent); quiescent, 1,396 (24·1 per cent); improved, 1,654 (28·6 per cent); unimproved, 719 (12·4 per cent); died, 414 (7·1 per cent).

The non-tuberculous group, mostly with disorders of the respiratory tract, includes diseases which complicated diagnosis. Of the 343 cases classified, 4 were cured (0·9 per cent); in 14 (5·6 per cent) the disease was quiescent; in 293 (85·3 per cent) improved; in 27 (7·8 per cent) unimproved and 5 (1·3 per cent) died.

RELAPSES

Relapse was the cause of 1,042 (estimated) (11·2 per cent) of the 9,382 admissions, and relapsed cases numbered 731 (10·8 per cent) of the 6,771 discharged, and 177 (12·8 per cent) of 1,376 of those now under treatment. These patients help to raise the proportion of bacillary positive cases in the present patients to 54 per cent, as compared with 47 per cent in the discharged group. In the combined groups, 43·8 per cent were bacillary positive.

It is inevitable that the number of admissions for relapse, compared with direct admissions, will steadily increase and they, along with progressive long-treated cases, will ultimately form the large proportion of patients who must be kept under treatment.

Not all relapsed cases are readmitted, but the majority probably re-enter sanatoria. Comparable figures for civilian patients are not available.

The primary causes of relapse have been classified, but it should be recognized that several factors may be closely correlated and the cause not always fairly determined. They are as follows for a combined group of 7,550 discharged and present cases: Insufficient treatment, 49 per cent (424); misconduct, 13 per cent (110); intercurrent disease, 17 per cent (144); insufficient monetary compensation from the Government, 4 per cent (38); overwork, 13 per cent (113); unhygienic living and working conditions, 1 per cent (7); other causes, 3 per cent (29). In the group under treatment as compared with the discharged group, intercurrent disease, insufficient monetary compensation, and overwork, have increased relatively as causes of relapse, with proportionate decrease in the other groups. Insufficient treatment in the majority of instances has been due to the patients' unwillingness to remain in the sanatorium. Insubordination has been a cause of discharge in 2 per cent of the dischargees.

DURATION OF TREATMENT

The average length of treatment of discharged patients has been 5¼ months, the maximum average of one institution was 8½ months, and the minimum average 1½ months (in a reception and distribution hospital where only advanced cases were retained).

DURATION OF DISABILITY

A forecast of the future of the discharged patients has been made from data obtained from representative serial groups of 100 cases from each of fifteen sanatoria. The patients are classified in groups according to the degree and probable duration of their disability. This should prove for all kinds of cases to be temporary in 37 per cent (2,860 of 7,716 discharges); indefinite in 32 per cent (2,465); and permanent in 31 per cent (2,385), including 8 per cent (615) who died. The bacillary positive pulmonary cases (3,620) show naturally a less favourable outlook. Only 11 per cent of these are likely to be but temporarily disabled; 35 per cent will probably be indefinitely, and 54 per cent permanently, disabled, including 16 per cent who died.

PATIENTS STILL UNDER TREATMENT

The patients under treatment on April 30, 1920, were 1,791, on the strength of the department, and 1,530 of these were at the several sanatoria. The latter on analysis show up rather less favourably than do the patients discharged. The average duration of residence is already 18 days (12 per cent) longer, 2·4 per cent more are bacillary positive; relapsed cases are greater by 1·7 per cent and the forecast as to disablement is worse; 7 per cent of the temporary group having dropped into less favourable groups.

Of the 1,436 patients under treatment during the time of the board's visits 103 (7·2 per cent) were ex-officers, 24 (1·7 per cent) were ex-nursing sisters, and 1,309 (91·1 per cent) were ex-service men of other ranks. Of these also, 378 (26·3 per cent) were in the infirmary, 264 (18·4 per cent) were up, but restricted to a porch life, while 794 (55·3 per cent) were able to take varying amounts of exercise and to work in the occupational shops and schools. (Numbers were derived from percentages of 1,358 analysed.)

OVERSEAS GROUP VS. NOT-OVERSEAS GROUP

Seventy-seven per cent of patients treated for tuberculosis were men who had been overseas. An interesting comparison of results of treatment obtained in ex-service men who have been overseas, and those who did not leave Canada, is made possible by figures obtained from the department covering a period of 16 months; 3,218 cases of men in both categories have been classified as 73 per cent tuberculous; 3 per cent non-tuberculous; 6 per cent refractory (AWL 2 per cent and refused treatment 4 per cent); 18 per cent no record. Considering those classified as tuberculous (of whom 1,745 (75 per cent) were overseas men and 585 (25 per cent) not overseas), the following results of treatment are found: In proportion to 100 overseas

cases in each instance, the disease in not-overseas cases was apparently arrested in 209, quiescent in 143, improved in 86, unimproved in 115, and 71 died. Similarly proportioned, the not-overseas non-tuberculous cases were 68, and the refractory cases 28. The less satisfactory results for the overseas group are due to four main causes: greater hardship and conditions which favoured advance of disease until recognized; interference with treatment because of travel and change of hospital or sanatorium; varied standards of medical control; restlessness with refractoriness to necessary regime, resulting from military life. The last-mentioned factor is shown by the relatively large number of refractory cases amongst the overseas group.

POISON GAS

The influence of poison gas as a factor in producing tuberculosis has been of concern to both the public and medical profession. The personal equation of the individual physician in determining whether or not gas has been a factor, and to what degree, in producing the present illness, even when supporting documentary evidence is forthcoming, must be recognized. The widely-varying proportions given by the medical officers of the cases classified at the various sanatoria suggest that bias in clinical judgment is unavoidable. During the latter half of the war, nearly all soldiers in the field are said to have been exposed in some degree to different kinds of gas. Exposure to gas enters, therefore, into the clinical histories of a large number of cases. The composite opinion of the medical officers who have analysed 7,551 histories of illness show that in 445 instances (5·9 per cent) gas exposure bears some relation to the present illness. In only 24·5 per cent of these was documentary evidence produced (although it may have existed for a much greater number). Of these gas-factor cases, 386 (5·1 per cent of the total group) had tuberculosis, either bacillary positive or clinical, and 58 (0·8 per cent) were not tuberculous. In only one-quarter of the tuberculous group, and in one-fifth of the non-tuberculous group, was there supporting documentary evidence. Amongst the 328 patients individually examined by members of the board only an occasional patient was seen in whom gas could be considered a determining factor in illness.

Consultations on Patients Under Treatment

At twenty-four of the institutions visited, the board made a detailed examination of 328 patients, while many more were seen more casually in consultation with the several superintendents, especially in regard to prolonging or terminating treatment. Rarely did the examination add to information concerning, for the most part, well-worked-over cases. Very few patients could be considered as kept unduly long for their physical needs, and the welfare of the patient was found to be justly considered when termination or prolongation of treatment had been decided upon. The experience of civilian sanatoria is that the vast majority of patients are treated for too brief a time. The 49 per cent of relapses due to insufficient treatment, already referred to, further emphasizes this point. The more prolonged average period of treatment of present patients of nearly six months, with a year as the average period in one small institution, is evidence in part of practical appreciation of this lesson by medical superintendents, and further evidence that relapsed cases require proportionately longer treatment.

DIFFICULTIES IN DIAGNOSIS

The war, with its aftermath of chronic respiratory infections amongst ex-service men, requires of the sanatorium physician a more accurate differentiation of pulmonary diseases than formerly obtained. The safe and easy course before the war was to regard an indefinite lung affection as tuberculosis unless there was strong evidence to the contrary. The recognition to-day of various chronic respiratory infections impairing health, suggestive but not typical of tuberculosis, introduces a

very great difficulty in appreciating fairly the condition of a patient in whom there is reason also to suspect a present or past tuberculous affection. The physician may use all modern means of diagnosis for his suspect cases, and still have reason to doubt the rightness of his conclusions, although for pension requirements he must make a decision. Doubtful and non-tuberculous cases formed 17 per cent of all admissions of D.S.C.R. patients. A number of sanatorium physicians were at a loss in placing these patients, although all facilities for intensive differential diagnosis were at hand. Sometimes they were confused because of the point of view of consultants and of the Pensions Board examiners, especially in regard to patients manifesting a latent clinical tuberculosis, but with a complicating affection. It would be helpful if standards of diagnosis were formulated which, while demanding a minimum of research, would compel accurate deductions before reaching a diagnosis. A class for cases of doubtful evidence, while needed, is a temptation to inaccurate diagnosis. The classifications used for sanatorium purposes, carefully defined, but necessarily arbitrary, have distinct limitations which have been severely strained by these recently-added difficulties in diagnosis. The necessity of some modification is obvious, which will include, but still differentiate, those cases here designated as having latent clinical tuberculosis. This type of case peculiarly complicates the classification of degree of disease and the result of treatment in sanatoria. The patient gives evidence of a past tuberculosis, which is confirmed by X-ray examination, but the disease may be quite arrested, cause no symptoms, and bear no relation to the present illness from which the patient suffers. Nevertheless, it cannot be disregarded as a possible factor in the present illness until a period of observation by a competent observer has made possible a decision in regard to its neutrality. Such cases, of which there are many admitted to sanatoria, should not properly be classified amongst the actively tuberculous, nor should the sanatorium be credited for effecting an arrest of an inactive and probably healed condition not responsible for the illness of the patient. This board has taken the opportunity afforded by collecting statistical material, of attempting to modify existing classification in order that the latent clinical group may be differentiated.

The Distribution of Patients in Sanatoria

RATE OF ADMISSIONS AND DISCHARGES

The rate of admissions to sanatoria has continued to rise even for the first third of this year. Discharges, however, have increased so steadily that they promise to exceed the admissions this year, and the peak has, therefore, been passed. The number of admissions to sanatoria is materially in excess of the actual number of individuals treated, as are also the discharges because of transfers from one institution to another, and of the readmission of relapsed cases.

REDUCTION OF BED CAPACITY

On April 30, 1920, there were 2,227 D.S.C.R. beds in twenty-seven sanatoria and hospital tuberculosis wards. This number of beds is 68 per cent of the total capacity of these institutions. Ten of the sanatoria were operated by the department, and, in two others under the department, provincial patients were also taken. Bowness Sanatorium, Alberta, of the latter type, was still under construction. Four provincial and ten civilian institutions also undertook the treatment of D.S.C.R. patients. The four western provinces contained 687 of the total D.S.C.R. beds; the two central provinces 1,175, and the maritime provinces 365. At this time 1,791 patients were under treatment for tuberculosis by the department and 1,530 of these were in sanatoria. Three months later, the patients under treatment in sanatoria had been reduced to 1,396, leaving a surplus of 831 beds in the several provinces. The closing of nine institutions: four in the western, four in the central, and one in the Maritime

provinces, under consideration by the department, was recommended, with due consideration to be given to the least possible separation of patients, especially those in the infirmaries, from the vicinity of their homes. Eight of these nine sanatoria are operated solely by the department. Six of the nine institutions: three in Alberta, two in Ontario, and one in Quebec, had been developed as temporary measures to meet urgent needs, and their temporary character had necessarily prevented development to the standards of efficiency of the larger permanent institutions. Three more permanent institutions: Balfour Sanatorium, B.C., Lake Edward Sanatorium, P.Q., and Dalton, P.E.I., could no longer be considered necessary for D.S.C.R. needs in these provinces, and closure of them was also advised at as early a date as could be arranged.* The provincial authorities have been approached with reference to the use of two of these for civilian patients. The completion of Bowness Sanatorium, Alberta, will alone make possible the closure of four smaller institutions; three in Alberta, and one in British Columbia. Eighteen institutions will then remain for the treatment of the tuberculous ex-service man. Five will be operated by the department, and, in three of these, provincial patients will also be taken. Thus 607 beds in all will be eliminated (27 per cent of D.S.C.R. beds) but the 1,620 remaining beds, an excess of 16 per cent over those now filled, can, in case of need, be supplemented by 177 reserve beds at the eighteen remaining institutions, making an excess of 28 per cent over present requirements. These reserve beds, however, are not all available without some internal readjustments in the sanatoria.

PATIENTS OUTSIDE THEIR OWN PROVINCE

Surprisingly few patients were found in provinces other than their home province or province of future residence. Of 1,461 D.S.C.R. patients in residence at the sanatoria during the summer (61 per cent of the total sanatorium patients), only 100 (7 per cent of the total D.S.C.R. patients) were outside their own province, and, dispersed amongst the several provinces, there were 149 patients (10 per cent of the total D.S.C.R. patients) from countries other than Canada. The percentage of extra-provincial patients in relation to the total D.S.C.R. tuberculous patients under treatment in each province was as follows: British Columbia, 27 per cent; Alberta, 32 per cent; Saskatchewan, 27 per cent; Manitoba, 12 per cent; Ontario, 14 per cent; Quebec, 24 per cent; New Brunswick, 11 per cent; Nova Scotia, 8 per cent; Prince Edward Island, 0 per cent.

TRANSFER OF PATIENTS

In order to effect this reduction in the number of institutions, 408 patients must be transferred to other sanatoria. Following the reduction, all provinces, excepting British Columbia, Ontario and Prince Edward Island, will have a large number of beds for D.S.C.R. patients, varying from 22 per cent to 93 per cent, in excess of the patients belonging to their respective provinces. British Columbia will be 23 per cent and Ontario 15 per cent short, and Prince Edward Island will have no S.C.R. accommodation. Institutions other than sanatoria in these provinces (e.g., the Vancouver General Hospital) can accommodate some of the excess, while part must necessarily continue in or be transferred to other provinces.

The benefit to be derived from being placed in more efficient and more pleasantly situated sanatoria, should, on the whole, more than offset the slight inconvenience some few patients must necessarily undergo through removal from the near neighbourhood of their homes. At the same time, a material economy will be effected by the department in the reduction of local overhead expense of sanatorium administration.

* These sanatoria have been closed.

The Treatment of the Tuberculous Ex-Service Man

THE SANATORIUM SITUATION IN CANADA BEFORE AND SINCE THE WAR

Housing, Service, Medical care and Discipline.—The anti-tuberculosis campaign in Canada had, by 1915, brought about the erection of 32 sanatoria and other institutions in eight provinces, with a total of 1,840 beds, one bed for every 4,400 inhabitants, with which to treat tuberculosis. Yearly deaths were 8,584, and 42,800 people, (five times the death-rate), a low estimate, were requiring treatment. In 1916, the Government recognized the need of the rapid expansion of existing institutions, and the speedy construction of new sanatoria, in order to care for the inevitable breakdowns from tuberculosis amongst the forces both at home and overseas. As the result of Federal initiative, exerted through the Military Hospitals Commission and the Department of Soldiers' Civil Re-Establishment, and through grants to aid provincial and municipal enterprise, the accommodation for patients had more than doubled by the end of 1919. There were then 3,860 beds in 38 institutions well distributed amongst the nine provinces, one bed for every 2,300 inhabitants. Some of this additional accommodation had been improvised at time of need, but, this year, sanatoria undergoing expansion, or being newly built, have been completed and can replace some of these improvisations. Reservation of 58 per cent of the total accommodation in Canada has been made for ex-service men, or 68 per cent (2,227 beds) of the capacity of the 27 institutions in which the department's patients are being, or, until recently, have been treated. In these institutions, 1,461 beds, or 66 per cent of the department's reservation, are filled, while 91 per cent of the remaining civilian beds are occupied. The civilian population has 597 additional beds in other institutions, a total of 1,633 beds in all.

CIVILIAN HARDSHIP

With the rapid influx of patients from the C.E.F., 2,204 in 1918, and 3,354 in 1919, 24 per cent and 36 per cent respectively of the total (9,382) admissions to April 30, 1920, the civilian population requiring treatment underwent considerable hardship. There had been but little sanatorium development by civilian enterprise since 1914, and a large proportion of the already limited bed accommodation was reserved for the returning soldiers until time had been given for the completion of the necessary construction being undertaken by and with the aid of the Government.

INCREASED EFFICIENCY

While the actual rate of incidence in ex-service men has been estimated to be double that in a comparable civilian population (estimated for 1915), the ex-service man must be treated, while the civilian far too often is not. Moreover, during the years of the war there has been an appreciable rise in the civilian rate. One of the real benefits of the war, therefore, is the great increase in sanatorium capacity because of the participation of the Federal Government. Not only has the accommodation been more than doubled, but all institutions which have enjoyed Federal assistance are much more highly efficient, because of improved equipment, as well as enlargement. This increase in capacity and efficiency could scarcely have been attained in a decade or more under the ordinary conditions of peace without this assistance. Because of war and its results a much longer period would have been required.

Sanatoria have, in Canada, had a hard struggle to become efficient, since the compelling need of expansion for the many who demanded admittance had hitherto restrained improvement of facilities and equipment needed, especially for the development of high standards of diagnosis. In the fifteen sanatoria which the department will continue to operate or co-operate with, after the contemplated closure of nine other institutions has shortly been effected, there are to-day, besides the usual

essentials for medical work, good clinical laboratories in all, and also fourteen highly-efficient X-ray installations. Two tuberculosis wards, of three in connection with one special and two general hospitals, in which the department's patients will also be treated, have similar facilities. In eleven of the present sanatoria, the X-ray plants have been directly or indirectly the result of the department's action. In four of the nine institutions to be closed, there have also been X-ray installations. The laboratories in five of the sanatoria have been entirely developed or materially assisted by the department. Comparatively few additions to medical equipment will make all institutions thoroughly well found. The provision of good working facilities is of itself an incentive to a high order of work.

SPECIAL CONSTRUCTION

More than seventy buildings in all have been erected through Government aid, to serve various purposes, apart from enlargement of existing buildings.

Ten special infirmaries of admirable design and construction, of 50 to 100-bed capacity, have been built entirely, or partly, by the department, and modifications of four other sanatoria for infirmary space have been made. In some respects, the result might have been even better from a medical standpoint if expert advice had been more fully used. In eleven of thirteen other institutions, suitable infirmary accommodation existed. Nine elevators were installed in the infirmaries having more than two floors. Elevators had been originally included in one other sanatorium and in four wards, divisions of larger hospitals. In the institutions treating D.S.C.R. patients, 35 per cent of the department's accommodation is infirmary.

The accommodation for ambulant patients is mainly of the pavilion type, the pavilions being subdivided into wards with porch space, each for eight to ten patients, and with central dressing rooms, lavatories and sitting-rooms. These are mostly of frame, or frame and stucco construction, and have proved to be practical. Most are much better built and finished than the original lean-to type of building, of which they are a further development. Thirty-six of these pavilions have been built.

Service buildings for dining-rooms, kitchens, and female employees have been especially built by the department for five sanatoria, and great enlargement of existing plant was made in five others. In seven sanatoria, cafeteria facilities have been especially provided. Opportunity has also been provided for recreation, entertainment, moving pictures, theatricals, etc., and canteens, in ten sanatoria by special new buildings, separate or combined with service or vocational buildings. Special provision has also been made for occupational therapy and vocational instruction in eleven sanatoria. In the remaining institutions fair, but occasionally inadequate, facilities already existed; in 17, for recreational, and in 16, for vocational needs.

Six of the sixteen central power and heating plants, and four laundries have been built by the department. These were well-appointed and highly efficient. Administrative and medical rooms in most instances were sufficient, but because of necessary compromise were occasionally not well placed nor large enough for efficient service. One new large administration building was built.

Staff quarters in many of the sanatoria have not been developed proportionately to other enlargements. The nurses' quarters in six sanatoria are in separate, entirely suitable buildings (five of which are due to the department), and in eleven others fairly adequate accommodation is found in administration buildings, but in eight sanatoria the nurses' quarters were crowded, sometimes unpleasantly near patients, and suitable living-rooms were lacking.

Sufficient provision for the men of the upper staff was lacking in seven sanatoria, and in one large sanatorium there were no quarters for a married medical superintendent. In the larger sanatoria, often in isolated situations, provision should be made for a married assistant physician as well as a superintendent. A better selection and longer service would thus be assured. Three residences for superintendents have been built.

For male and female employees of the lower staff, the quarters were inadequate in seven sanatoria.

WELL-BALANCED INSTITUTIONS ESSENTIAL FOR EFFICIENCY

Owing to the enlargement of sanatoria, originally well proportioned, the balance in numbers between patients and staff on the one hand, and the relation of personal to general living quarters on the other, have been disturbed and not yet restored in a number of instances.

Sanatoria of considerable size and relatively isolated should be self-contained and well-proportioned in regard to quarters for both patients and staff, and for both, because of social restrictions, adequate living and recreational rooms are necessary. Where the institutions were ill-balanced, it was evident that, with both patients and staff, discontent prevailed in proportion to their inconveniences, and that esprit de corps was seriously impaired.

LOCATION

The locations of ten sanatoria in eight provinces had been chosen especially for climatic advantages and their sites are also all placed in beautiful surroundings. The locations of fifteen had been due to expediency, but the sites of seven of these are also in charming country. The results noted in the various institutions further emphasize the accepted opinion that climate is but rarely essential for the welfare of a patient, but that medical supervision, disciplined treatment, and suitable living opportunities are all-important. Five of the sanatoria are much isolated, but, if the institution is sufficiently self-contained, this is mainly of importance because sometimes it is difficult of access. From the point of view of treatment these isolated institutions are much more fortunate than are five other sanatoria, all in Ontario, situated near large centres, where there is the constant temptation to the ex-service man to commit breaches of discipline to his own detriment.

Fine institutions are not essential to happiness, since, in two improvised buildings, contentment and cheerfulness prevailed and the opportunities for treatment were good. This was in part due to the fact that single or double rooms permitted a degree of privacy not to be found in the larger well-built pavilions of ward type.

EQUIPMENT

The furnishings and equipment in general were suitable to the several institutions. In many sanatoria, the kitchens were finely equipped with all desirable modern conveniences.

SERVICE

The medical service of most sanatoria was relatively under-staffed. This is partly due to the difficulty of obtaining physicians experienced in, or interested in, tuberculosis, and to the fact that medical men choosing tuberculosis work are largely recruited from those who themselves have had the disease. Technical assistants helped to make good the deficiency. Some arrangements for dental service existed in all the institutions.

The nursing service in all institutions was fully adequate to the needs of both the department's patients and the civilian patients as well.

The food, which is under the supervision of dietitians at eighteen sanatoria, was satisfactory in quality and preparation in all. Meals were taken with the patients in all institutions except four, where there were no general dining-rooms.

The cafeteria service in seven sanatoria was of variable efficiency. It is necessary no doubt in certain localities where service difficulties are great, and it effects some economy. Nevertheless, apart from the manner of presentation of food as compared with a dining-room service of the ordinary kind, there is a distinct loss of morale from such a service, that is unfortunate. Meals are social events and patients prepare for them and behave accordingly. Under the self-serve system, the function of the dining-room in maintaining sanatorium morale is largely lost.

The average number of staff required to serve these institutions was 55 per cent of the number of patients. In four of the larger institutions, all highly efficient, the staff ranged from 34 to 45 per cent. The smaller institutions, and those with many vacant beds, naturally had a higher ratio, the maximum being 85 per cent. A fair idea of the relative efficiency of the institutions from the point of view of service is difficult to estimate because of several variable factors, viz., the number and the condition of patients; the rate of turnover of patients; the number and the quality of staff personnel; the standards of work maintained; and the institutional facilities. Impressions only could be formed, and the general service was thought to be satisfactory in twenty-two of the twenty-six institutions visited.

The volume of work of these institutions is suggested by the fact that the million and a half hospital-days that D.S.C.R. patients have been treated are equivalent to more than forty-one centuries of treatment for one patient.

CHARACTER OF MEDICAL WORK

The medical work in the twenty-six institutions varied in quality. Four of these institutions were tuberculosis wards attached to hospitals with no resident physician especially devoted to tuberculosis, and these cannot be considered as sanatoria. The thirty-one patients in them were well cared for, but the kind of work possible here can scarcely be compared with sanatorium standards.

Of the twenty-two sanatoria proper, your board found the medical work less than good in four (treating 193 patients, 13 per cent of total of those under treatment and 47 per cent of 408 who are to be transferred); good in twelve and high in six. With nine institutions closed in the near future, requiring the transfer of 408 patients, the rating for the remaining fifteen sanatoria will be good in nine and high in six. Other institutions not classified are three tuberculosis wards attached to hospitals. (Central Alberta Sanatorium, opened since inspection, is included in the number now operating.)

MEDICAL RECORDS

The records were kept in a manner comparable with the above rating. The various kinds of record forms reflected the ideas of the different superintendents, past and present, aside from the department's forms used in ten institutions. It is considered best that superintendents should develop forms suitable to their individual methods of work. Where individual sanatorium forms are used, those might well be supplemented by a sheet calling for special data for the department's purposes.* The standardization of statistical data is highly desirable, and it would be helpful if the various institutions might be advised regarding uniformity of compilation by a statistician familiar with the requirements of this special field. The recent inquiry by the board has revealed the confusing methods which now exist in compiling the statistical data, so important to a fair realization of the tuberculosis problem as regards ex-service men, and also of civilians. Discrepancies are very numerous, and fair comparison is difficult.

MEDICAL STANDARDS

The establishment of standards of differential diagnosis insisting upon the minimal diagnostic work necessary to bring about more uniform grading of difficult cases; the enlargement of the standard classification for grading cases and results of treatment to meet present difficulties; and the devising of uniform methods of recording ultimate statistical data, might well be initiated by the department for its own convenience, and for the benefit of civilian work as well. The results of uniformity would show in the annual reports of institutions to the advantage of all. Annual

* This form has been supplied.

statistical reports from individual sanatoria operated by the department should be required. Uniformity of standards thus brought about might possibly result in the ultimate adoption by all sanatoria of the best devised record forms, with resulting uniformity of records.

METHODS OF TREATMENT

The methods of treatment in vogue comprise all generally accepted as sound at the present time. A maximum of out-of-door life through the facilities provided; adequate nursing; an ample dietary; food and diets supervised by trained dietitians; regulated rest and exercise; artificial pneumothorax; tuberculin (occasional); heliotherapy, both natural and artificial; dental; and occupational. Lectures, often illustrated, are given at more or less regular intervals in most institutions, and, in some, health bulletins and sanatoria papers are used for further instruction. These supplement printed instructions.

MEDICAL RESEARCH

Research unfortunately has little place in Canadian sanatoria. During the recent years of war, pressure has been felt in all, resulting from the larger volume of work due to increasing numbers of ex-service men, and the inconveniences and responsibilities arising from the new construction and modifications which have taken place in eighteen of the sanatoria. Some working-up of clinical material has been accomplished, and a number of useful and occasionally excellent papers have been published. Every encouragement should be given to this kind of work by supplying sufficient assistance for the considerable labour required. Laboratory and experimental research also need encouragement, as in this field nothing has been done. Institutions as a whole, and patients and physicians alike, benefit greatly where all such researches are carried on.

SPECIAL CLINIC

The department's clinic at the Toronto General Hospital requires mention apart from sanatoria. This active centre of clinical work is intimately co-ordinated with the Connaught Research Laboratories. Serological studies, tuberculin tests, protein sensitization tests, and excellent X-ray work are all combined with the intensive clinical study of cases at this clinic. It is of great value not only to the patients in the unit, supervised by the department, but also to the physicians of the unit and to the examiners of the Board of Pension Commissioners. Similar clinics, where need and opportunities somewhat comparable exist, might well be established in the interest of the department's patients, as for example: The development of the Rotary Clinic at Vancouver; of the Royal Edward Institute at Montreal; and of the St. John County Tuberculosis Hospital at St. John; and possibly in other centres.

ORGANIZATION

The organization of sanatoria should properly be self-contained. The medical superintendent should be in complete charge and all officials accountable to him. He should be the sole channel of communication with the governing board whether that board is civilian or departmental. There should be no functional control from outside the sanatorium.* At all points where previous experience shows the need of functional foremen, so to speak, in institutional administration, these officials should be continued, or suitably replaced if withdrawn because of proposed changes in organization, but placed definitely under the superintendent's control. For economic reasons and to enlarge interest in management, monthly or quarterly statements of

* The chain of responsibility in hospitals has been re-organized since inspection by this Board; the several recommendations made have been incorporated in the new scheme of organization.

itemized costs, of per capita costs, and of costs of segregated services, should be forwarded to the superintendent when accounting is carried on outside the sanatorium. An interchange of standardized financial reports amongst the various institutions would also be helpful and stimulating.*

ATMOSPHERE AND DISCIPLINE

Impressions regarding the general atmosphere and discipline were obtained from the several meetings held with both patients and staff at each institution. At each meeting, all were invited to make, without prejudice to themselves, any complaints or suggestions they had in mind.

The atmosphere and discipline of the institutions are generally interdependent, and the result of several factors, viz: the nearness to large centres; the traditions and control established in the past; the personality of the superintendent, and to a less extent, his staff; the efficiency of the medical work; the support given the superintendents by department officials outside the institutions; and the sufficiency and proportion of the various buildings and facilities of the sanatorium. The atmosphere was, on the whole, one of cheerfulness and appreciation in all but six institutions. In one of these there was nothing wrong, and, in another, circumstances difficult of correction were at fault. In the former, a spirit of resentment had developed amongst some few patients against the restrictions which a new and efficient superintendent enforced in the general interest of the patients. Nearness to a city, with immediate proximity to an amusement park, and previous laxness in regard to leave had combined to create a spirit of freedom from restraint difficult to control. In the latter, the considerable distance from a small town with few opportunities for transportation, along with relatively limited facilities for recreation and amusement at the sanatorium for the number of patients, combined to cause irritation.

Inadequate medical supervision was responsible for an atmosphere of depression and some complaints in two small improvised institutions, otherwise comfortable and fairly satisfactory.

Lax administration and medical supervision, along with a rather overcrowded building, faulty in several details, offered good reason in a fifth institution for complaints, although on the whole the patients were cheerful.

In a sixth, the improvised building, structurally unsuitable for its purpose, gave reasonable grounds for much dissatisfaction. The association also with a convalescent group of patients treated in the same institution, who were not tuberculous, and who were allowed a degree of liberty greater than would be proper for tuberculous patients, invited breaches of discipline, the control of which caused resentment.†

COMPLAINTS

There were only 132 institutional complaints from amongst the 1,530 patients in twenty-four institutions. From fourteen sanatoria, there were none whatever which referred to the institutions. From eight sanatoria there were 37 (28 per cent), and from two, 95 (72 per cent). These last two have already been closed. Other complaints referred to departmental and pension matters. As a rule when some reason for complaint existed it was reiterated several times, thus increasing the number of complaints, and, in a number of instances, the complaints listed were not entirely justified.

DISCIPLINARY DIFFICULTIES

Disciplinary difficulties are less frequent now than during the earlier years when military life was nearer. While relatively few in number they are, however, more or

* Individual critiques regarding institutional costs, with comparison of such costs in other institutions, are forwarded at end of each month to Unit Medical Directors for distribution.

† The sanatoria referred to in the three preceding paragraphs have been closed.

less general wherever any considerable number of ex-service men are in residence, and their frequency depends largely upon environment. Some sanatoria were unfortunately too accessible to towns. Sanatoria at a considerable distance from a centre of population, and well beyond easy walking distance from a town, are more fortunate. Then the visiting of friends is limited, and cost of travel stands in the way of applications for leave. Leave in a sanatorium is not to be demanded as a matter of right since it seriously interferes with treatment, but should be for cause only. The right idea in regard to the treatment of tuberculosis, which is all important (to the patient), is probably more easily obtained and sustained in those sanatoria which also treat civilians, than in those treating only ex-service men. Moreover, the civilians indirectly influence the point of view of the ex-service men in other matters, and help to link them again to civilian conditions, and the problems which lie before them after discharge. It is quite natural that ex-service men in general should have proved less amenable to the restrictions of sanatorium life than civilians, although identical methods are required to obtain the best results. A majority conform quite as well as the average, and some even as well as the best, of civilian patients, but that a minority are decidedly more difficult to treat has been the experience of all sanatorium physicians. Discipline in relation to treatment is all important, and infringement of it the greatest handicap to the individual patient, and to the patient body as a whole. A definite line should be drawn in regard to infringements of discipline; trespassing beyond this by a patient should constitute refusal to take treatment, followed by withdrawal of support and cessation of responsibility by the department.

CONCLUSION

The sanatoria for the treatment of tuberculous ex-service men, recently inspected, were, on the whole, with four exceptions, highly efficient. These four institutions were of a temporary nature, improvised at a time of need when other facilities were not available. Two of the four, in the west, were difficult to provide with physicians experienced in treating tuberculosis. These four have now been closed, and five others have been or will also be discontinued by the department, two of which will revert to civilian use. The remaining fifteen sanatoria are of high standard, and under the direction of men experienced in the diagnosis and treatment of tuberculosis and other pulmonary affections. The three tuberculosis wards are good, but in a different class. Canadians may feel assured that their fellow-countrymen who have given war service and are now tuberculous, are being cared for by physicians competent and experienced, and in special institutions developed for their needs, of which the country may well be proud.

Upon the completion of a most interesting and instructive tour of the sanatoria in Canada under the control of, or working in co-operation with, the Department of Soldiers' Civil Re-Establishment, this board was entirely of the opinion that a great constructive work had been done by the Government of Canada on behalf of her tuberculous ex-service men, in a broad and sympathetic manner. Not only assistance, but also a real and needed stimulus, has been given to the whole anti-tuberculosis work in Canada.

The Care of the Tuberculous Ex-Service Man after Discharge from Sanatorium

FOLLOW-UP, AFTER-CARE, EMPLOYMENT, RE-ESTABLISHMENT

The report of the board on the after-care of tuberculous ex-service men is very comprehensive, and will be of the greatest value to all persons interested in this subject. The following brief summary does not do justice to the full report, which will be published in due course.

SECTION II

The care of the Tubercnlous Ex-service Man after Discharge from Sanatorium

PUBLIC INTEREST

The general subject of after-care of the tuberculous is a matter of public interest, as well as one of great importance to the individual concerned, and to his immediate relatives. Amongst anti-tuberculosis workers to-day, it is generally regarded as the weak link in the chain of effort that is being made to help successfully those who have broken down with tuberculosis. The problems for civilian and ex-service men are alike, but the latter is in a better position pecuniarily because of government assistance, while the former, as a rule, has a greater incentive to get, and remain, well, because of the lack of such assistance.

THE DANGER OF RELAPSE

The benefit derived from sanatorium treatment will, with a majority of patients, be lost unless measures are promptly taken upon the termination of such treatment to secure the best possible conditions for the individual in both home environment and work. The relapsing character of tuberculosis persists even after sanatorium treatment, which is not an end, but only a beginning of the care necessary for the affected individual to practice throughout his life, if he expects to maintain health. The danger period is immediately on leaving the sanatorium because of the difficulties of readjustment of the convalescent to ordinary living conditions. This immediate danger for the ex-service man has been partly met by the full pension allowed in all cases for a limited period.* The danger period is prolonged for the man who again undertakes employment since this is liable often to be beyond his physical capacity. He must always maintain a physical reserve, and be able to repair physical expenditure by adequate rest taken in an efficient manner. Sanatorium treatment affords a relative cure only. Relapses, often irreparable, are certain for many patients who may have obtained satisfactory results from treatment, and increase in number until the fourth year after sanatorium treatment has been completed. After this period they subside, through the survival of the fittest, until by the seventh year the death rate for these cases has approached the normal. The figures already given show that relapses amongst ex-service men are increasing in numbers, and it is inevitable that this should be the case.

FOLLOW-UP SOCIAL SERVICE

Of immediate importance, in order to reduce relapse to a minimum, is the operation of an adequate "follow-up system" by nurses specially qualified for the work. This social service should enable department officials to have accurate information about the living and ultimate working conditions of the patient; competent advice can be immediately given by the nurse; more or less intensive, competent medical supervision can be arranged for the patient's need, and he will feel a sustained interest in his welfare. In a number of units, the board found this service already in effective operation, but much can yet be done to make it more effective, and especially to link it up with the sanatorium wherein exists the greatest knowledge of the individual case.

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* On discharge from sanatorium, 100 per cent pension is granted for tuberculosis disability wholly due to service; 90 per cent for tuberculosis disability aggravated by service.

MEDICAL SUPERVISION

The desire on the part of patients that they continue under the supervision and direction of the sanatorium physicians by whom they have been treated can be well understood. It would be quite impossible, however, in many instances. An arrangement for a considerable number might possibly be made, whereby some sanatorium, if not the one in which the patient was originally treated, should be the centre to which he would be referred for advice. It must, however, be recognized that the responsibility of sanatorium physicians is to the present rather than to the past patients, and this extra tax upon the time of the staffs would have to be met by providing necessary assistance. To recommend the sanatorium control of all discharged patients would be a counsel of perfection quite impracticable as a general principle. The establishment of special clinics, or the appointment of specially-qualified medical advisers at convenient points, is desirable, but, unfortunately, since at all desirable points there are not enough physicians especially trained in the supervision of the tuberculous, the best possible compromise with existing conditions must suffice for many.

FINANCIAL ASSISTANCE

Essential to successful after-care is financial aid from some Government source, adequate and maintained, according to the reasonable need of the individual, to compensate him for his relative loss of earning power. Where this loss is complete, extra compensation is suggested, proportioned to the degree of illness and need of care as in other cases of extreme disability, when the patient is not treated in an institution. Help in the form of both prompt advice and pecuniary assistance from some special bureau should be forthcoming where necessary, in order to make safe living conditions for both the patient, and in the case of a married man, his family.

EMPLOYMENT

From a therapeutic, economic, and moral standpoint, the situation of every tuberculous ex-service man who has satisfactorily completed a course of sanatorium treatment, and who is neither totally disabled nor in need of absolute rest, demands that he engage in some form of employment. The form of employment engaged in should be approved by the medical supervisor whenever possible.

BUREAUS OF INFORMATION

Bureaus of information for bringing the man and opportunity together, in the interest of the tuberculous especially, are desirable.

SHELTERED EMPLOYMENT

Since favourable opportunities for work in the ordinary labour market exist for only a limited number of tuberculous ex-service patients, it is desirable that certain kinds of sheltered employment be created in localities where they would be justified by a sufficient number of men who would engage in them. These enterprises should be developed cautiously at first as experiments at the centres which promise most success. While it is improbable that they can be justified on economic grounds, they are fully justified for therapeutic and moral reasons. The kind of employment devised for any locality should be that best suited for the inclination and training of the majority of patients in that locality. Inquiry was made by the board at all sanatoria visited concerning the desires of the men in regard to employment, and it was apparent that apathy at some points only required a lead to be transformed into interest and energy. In some sanatoria, most encouraging opinions were expressed by the men regarding the desirability of establishing limited industries in their behalf, with the assurance of their co-operation in case such opportunities were

realized. Indeed, at one institution, where the subject has been given much consideration, a practical plan of co-operation has been developed, for the materialization of which, steps have already been taken. Some governmental subsidy is anticipated, as well as help from private individuals.

GROUP ENTERPRISES

Where suitable patients have not the opportunity to co-operate in substandard shop or colony, certain small group enterprises might well be helped in fruit-farming, poultry-raising, and kindred occupations in suitable localities.

INDIVIDUAL ASSISTANCE

Again, where the patient must work apart from his fellows, assistance in individual instances, where warranted, should be considered.

NUMBER OF EX-SERVICE MEN SUITABLE FOR EMPLOYMENT

In order to estimate the practicability of developing forms of sheltered employment, the board asked for the opinion of the several medical superintendents about the probable disability of groups of patients, sufficiently large in number to be representative of all patients who have come under treatment. While there is room for inaccuracy, no other means short of an extensive individual survey could give comparable information, and the figures obtained may fairly be considered to be reasonable estimates of the future possibilities of the tuberculous ex-service man. These have already been given in the statistical summary. It is believed that 70 per cent of the two higher groups (in which disability is defined as "temporary" and "indefinite"), amounting approximately to 4,000 men, would engage in occupation, in some degree, if suitable work could be found. These men are distributed in the different provinces approximately as follows: British Columbia, 384; Alberta, 268; Saskatchewan, 306; Manitoba, 335; Ontario, 1,647; Quebec, 616; New Brunswick, 141; Nova Scotia and Prince Edward Island, 444.

CANADA'S DIFFICULTY

Standard enterprises, obviously, would not be warranted for all the provinces, since the number of ex-service men in some of them is relatively small. Canada, with its population spread over a strip of territory 4,000 miles in length by 400 in breadth, is topographically in a far different position from Great Britain and the United States for meeting the needs of the tuberculous ex-service man at all points, as regards the provision of opportunity for employment. In both of these countries there are concentrated populations with large numbers of tuberculous ex-service men to keep up the supply for workshops and colonies. In Great Britain, plans for the employment of the tuberculous have been put into operation, which give the suggestion for similar plans in Canada. All such plans are as yet considered by their advocates to be in the experimental stage, but it is time for Canada to undertake her own experiments to meet a very real need.

COMMENT

From the observations made while on the recent survey of Canadian tuberculous ex-service men, and from a review of the wide literature published relating to the after-care and employment for the tuberculous, the board has prepared a full report on these subjects, in which a number of suggestions and recommendations are made, too detailed and too controversial to discuss here.